CLAIMS

1. Nucleic acid sequence which codes for a protein from the group consisting of the chloride channels ClC-3, ClC-4, ClC-6 and ClC-7, characterized in that the nucleic acid sequence is modified by mutation, truncation or complete or partial deletion.

2. Non-human mammal, the germ cells and somatic cells of which contain nucleic acid sequences which code for a protein from the group consisting of the chloride channels ClC-1, ClC-2, ClC-Ka, ClC-Kb, ClC-3, ClC-4, ClC-5, ClC-6 and/or ClC-7, characterized in that the nucleic acid sequence(s) which code(s) for ClC-3, ClC-4, ClC-6 and/or ClC-7 is (are) modified with respect to the naturally occurring nucleic acid sequence by mutation, truncation and/or complete or partial deletion.

3. Non-human mammal according to claim 2, characterized in that the nucleic acid sequence(s) which code(s) for ClC-1, ClC-2, ClC-Ka, ClC-Kb and/or ClC-5 is (are) additionally modified by mutation, truncation and/or complete or partial deletion.

4. Cell line which does not express or expresses to only a reduced extent one or more chloride channels from the group consisting of ClC-1, ClC-2, ClC-Ka, ClC-Kb, ClC-3, ClC-4, ClC-5, ClC-6 and ClC-7.

5. Cell line according to claim 4, characterized in that it expresses the chloride channel ClC-7, but not the chloride channels ClC-3, ClC4, ClC-5 and ClC-6.

6. Cell line according to claim 4, characterized in that it expresses the chloride channel ClC-3, but not the chloride channels ClC-4, ClC-5, ClC-6 and ClC-7.

7. Cell line according to claim 4, characterized in that it expresses the chloride channel ClC-4, but not the chloride channels ClC-3, ClC-5, ClC-6 and ClC-7.

8. Cell line according to claim 4, characterized in that it expresses the chloride channel ClC-6, but not the chloride channels ClC-3, ClC-4, ClC-5 and ClC-7.

9. Use of a genetically modified, non-human mammal, the germ cells and somatic cells of which contain nucleic acid sequences which code for a protein from the group consisting of the chloride channels ClC-1, ClC-2, ClC-Ka, ClC-Kb, ClC-3, ClC-4, ClC-5, ClC-6 and/or ClC-7, wherein one or more of these nucleic acid sequences is modified with respect to the naturally occurring nucleic acid sequence by mutation, truncation and/or complete or partial deletion, for the identification and

testing of substances which are suitable for inhibiting one or more of the chloride channels.

10. Use of a genetically modified, non-human mammal, the germ cells and somatic cells of which contain nucleic acid sequences which code for proteins from the group consisting of the chloride channels ClC-1, ClC-2, ClC-Ka, ClC-Kb, ClC-3, ClC-4, ClC-5, ClC-6 and ClC-7, wherein one or more of these nucleic acid sequences is modified with respect to the naturally occurring nucleic acid sequence, but not the sequence which codes for ClC-7, by mutation, truncation and/or complete or partial deletion, for the identification and testing of substances which are suitable for inhibiting the chloride channel ClC-7.

11. Use of a genetically modified, non-human mammal, the germ cells and somatic cells of which contain nucleic acid sequences which code for proteins from the group consisting of the chloride channels ClC-1, ClC-2, ClC-Ka, ClC-Kb, ClC-3, ClC-4, ClC-5, ClC-6 and ClC-7, wherein one or more of these nucleic acid sequences is modified with respect to the naturally occurring nucleic acid sequence, but not the sequence which codes for ClC-3, by mutation, truncation and/or complete or partial deletion, for the identification and testing of substances which are suitable for inhibiting the chloride channel ClC-3.

12. Use of a genetically modified, non-human mammal, the germ cells and somatic cells of which contain nucleic acid sequences which code for proteins from the group consisting of the chloride channels ClC-1, ClC-2, ClC-Ka, ClC-Kb, ClC-3, ClC-4, ClC-5, ClC-6 and ClC-7, wherein one or more of these nucleic acid sequences is modified with respect to the naturally occurring nucleic acid sequence, but not the sequence which codes for ClC-4, by mutation, truncation and/or complete or partial deletion, for the identification and testing of substances which are suitable for inhibiting the chloride channel ClC-4.

13. Use of a genetically modified, non-human mammal, the germ cells and somatic cells of which contain nucleic acid sequences which code for proteins from the group consisting of the chloride channels ClC-1, ClC-2, ClC-Ka, ClC-Kb, ClC-3, ClC-4, ClC-5, ClC-6 and ClC-7, wherein one or more of these nucleic acid sequences is modified with respect to the naturally occurring nucleic acid sequence, but not the sequence which codes for ClC-6, by mutation, truncation and/or complete or partial deletion, for the identification and testing of substances which are suitable for inhibiting the chloride channel ClC-6.

14. Use of a cell line according to claim 5 for the identification and testing of substances which are suitable for inhibiting the chloride channel ClC-7.

15. Use according to claim 14 for the identification and testing of active compounds for treatment of osteoporosis or Paget's disease.

16. Use of a cell line according to claim 6 for the identification and testing of substances which are suitable for inhibiting the chloride channel ClC-3.

17. Use of a cell line according to claim 7 for the identification and testing of substances which are suitable for inhibiting the chloride channel ClC-4.

18. Use of a cell line according to claim 8 for the identification and testing of substances which are suitable for inhibiting the chloride channel ClC-6.

19. Use according to claims 14 and 16 to 18 for the identification and testing of active compounds which are suitable as psychotropic pharmaceuticals.

20. Process for the identification and testing of substances which are suitable for inhibiting one or more chloride channels from the group consisting of ClC-3, ClC-4, ClC-5, ClC-6 and/or ClC-7, in which

a) on cells according to claims 5 to 8, the luminal pH of the compartments which express the channel and/or the potential across the membrane enclosing the channel is measured,

b) the cells are brought into contact with a substance and

c) the luminal pH of the compartments which express the channel and/or the potential across the membrane enclosing the channel is measured again on the cells,

the difference between the pH and/or the membrane potential before and after addition of the substance determining the activity of the substance.

21. Process according to claim 20, characterized in that the pH is measured by accumulation of substances in compartments with a particular pH or detection of indicator substances which are formed in pH-dependent reactions in the compartments.

22. Process according to claim 20, characterized in that the potential is measured using potential-sensitive dyestuffs or protein-coded potential sensors.

23. Use of substances which completely or partly inhibit the chloride channel ClC-7 for the preparation of medicaments for treatment of osteoporosis and Paget's disease.

24. Use of substances which completely or partly inhibit the chloride channel ClC-3, ClC-4, ClC-6 and/or ClC-7 for the preparation of medicaments for treatment of diseases from the group consisting of neurological and neuromuscular diseases and other nerve diseases.

25. Use of substances which completely or partly inhibit the chloride channel ClC-3, ClC-4, ClC-6 and/or ClC-7 for the preparation of psychotropic pharmaceuticals.